

REMARKS

The Examiner has rejected Claims 21-23 as unpatentable under 35 U.S.C. 103 over U.S. Patent 6,834,340 to Lee (hereinafter Lee) in view of U.S. Patent Publication 2002/0091807 to Goodman (hereinafter Goodman) in view of U.S. Patent 6665813 to Forsman, et. al. (hereinafter Forsman).

The Amended Claims

Claim 23 has been amended to remove an unnecessary limitation regarding enablement of the high speed interconnect. When a cell provides a firmware update over the manageability system interconnect, the high speed interconnect is not required and may either remain idle or may be used simultaneously for other purposes such as loading or executing an operating system.

The New Claims

New claims 24-26 correspond to former claims 21-23, but have been rewritten to more clearly recite the cellular nature of the machine claimed, and to clarify the level of system to which the present application applies.

The 35 U.S.C. 103 Rejection of the Independent Claim

The Examiner relied upon Lee for elements of a cellular computer system having management interconnect, high speed interconnect, and a first and second cells each comprising at least one processor, memory, nonvolatile memory, and an interface to the high speed interconnect.

Applicant's claims are drawn to the hardware level of a computer system. Applicant's processors, management processors, memories, nonvolatile memories, and interconnect interfaces are physical functional units implemented in one or more interconnected integrated circuits; these integrated circuits are mounted in a module that is a cell.

Lee Fails To Provide A Cellular System

Lee describes three levels of a computer system architecture, a hardware level best illustrated by Lee's FIG 1, providing an environment for a first level virtual-machine having a pool of resources illustrated in Lee's FIG 2, and a partitioned virtual-machine level illustrated in Lee's FIG 3.

At the hardware level, as illustrated in Lee's FIG 1, Lee provides a conventional multiprocessor system with multiple memories accessed over a common bus.

The second level of Lee, illustrated in Lee's FIG 2, is the level cited by the examiner for the element of cells. Lee's FIG 2, however, merely shows a puddle having a single nonvolatile memory (Lee 298), several processors (Lee 232-238), several memories (Lee 240-246), and several I/O adapters (Lee 248-262), loosely attached through a firmware "hypervisor" (Lee 212) to "operating systems" (Lee 202-208). This common puddle of resources scarcely resembles Applicant's cellular hardware.

Only at the partitioned virtual-machine level illustrated in Lee's FIG 3 does an association of data structures (Lee 312), interfaces, and "firmware" communicating with "working areas" in system memory appear. No mention of processors or high-speed interconnect is made at this level, so it still does not resemble Applicant's cellular hardware.

The system of Lee is therefore not a cellular system at either the hardware or virtual-machine levels. Even if it were a cellular system in some way at the partitioned virtual-machine level, this is not analogous to the hardware-level cellular system claimed.

While Lee uses his management processor to update firmware, his NVRAM is singular. Lee seems to provide en-block firmware update for his entire machine, but does not disclose update of specific firmware associated with specific cells. Further, since his hardware is not cellular, Lee neither discloses using management interconnect to detect errors on cells nor for handshaking between management processors of cells to trigger a firmware update.

Goodman Provides a Limited Cellular System

The system of Goodman provides a cellular system at the hardware level. Goodman provides cells having processors, memory, local bussing, and interfaces to high-speed interconnect. Goodman even provides cell-associated firmware.

The system of Goodman provides many of the elements for which the Examiner cited Lee and which are missing in Lee. This is unlike the related case 09/998,630, because 09/998,630's independent claims have additional elements of management processors and management interconnect that are missing in Goodman.

Goodman's Firmware Update

As stated by the Examiner, Goodman provides for updating firmware of cells to the most recent firmware found on a cell of the system. As admitted by the Examiner, Goodman fails to provide the elements of detection of corrupt firmware, and fails to provide for updating of corrupt firmware with valid firmware.

Applicant notes also that Goodman fails to provide the manageability system interconnect and cellular management processors claimed in all dependent claims.

Forsman

As stated by the Examiner, Forsman (Forsman FIG 2) provides a "service processor" (SP) that has some of the functions of applicant's "management processor".

However, the machine of Forsman is not a cellular machine at any disclosed level. Inspection of Forsman FIG 2 makes this readily apparent. The network of Forsman is not a cellular machine. Forsman therefore is incapable of providing a "fresh" copy found on another cell of the same machine, and thus cannot provide any error checking on the "fresh" copy.

The Cited Combination Therefore Lacks Elements of the Claims

For the aforesaid reasons, the cited combination fails to provide the claimed elements of a first cell containing "machine readable code for recognizing that the firmware in the nonvolatile memory system of the first cell is corrupt and, upon recognizing that the firmware of the first cell is corrupt, for updating the nonvolatile

memory system of the first cell with firmware copied from a cell having valid firmware;” and a second cell containing “machine readable code for recognizing that the firmware in the nonvolatile memory system of the second cell is valid, and for transmitting the firmware in the nonvolatile memory system of the second cell to the first cell.”

Forsman Teaches Away From the Combination

Forsman teaches specifically that only one copy of much of a machine’s firmware (Forsman’s composite code) need reside on a machine. When the composite code is corrupt, Forsman looks to a “fresh” copy of firmware from a floppy or from a backup location on a network.

Forsman thereby teaches away from the present invention by teaching that only one copy of firmware need reside in nonvolatile memory on a machine, thereby teaching that a complete backup copy of the cell-associated firmware would not reside in nonvolatile memory on a second cell of the same machine. In contrast, Applicant’s claimed system provides that the copy of cell associated firmware used to replace corrupted firmware is found on another cell of the same machine.

The Dependent Claims

The Examiner relied upon Lee for the element of management interconnect, for the use of this management interconnect in locating valid firmware in a second cell, and for triggering transfer of the valid firmware to the first cell.

As heretofore shown, Lee fails to provide this element because Lee fails to provide cells at the level of architecture where his management interconnect exists.

Even were Forsman’s network found to be a cellular system, Forsman fails to separate management interconnect from high speed interconnect as only one interconnect is present on his network (Forsman FIG 1). Forsman thus fails to disclose handshaking on a separate management interconnect as claimed.

Goodman also fails to disclose management interconnect as distinct from high speed interconnect.

Dependent claims 23, 23, 25, and 26 all reference distinct and separate high speed and management interconnect. Since this is lacking in the cited combination, the cited combination is not valid against these claims under 35 U.S.C. 103.

CONCLUSIONS

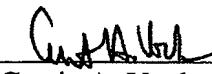
Since the cited combination lacks many elements of the present claims, and since Forsman teaches away from the combination, Applicant believes that the pending 35 U.S.C. 103 rejection of independent claim 21 has not met the Examiner's burden of both finding the elements of the claimed invention in the art and a suggestion in the art that these elements be combined to produce the invention. Further, instead of suggesting that these elements be combined, Forsman actually teaches away from the combination.

Applicant therefore respectfully requests that the Examiner enter the foregoing amendment to the claims to place the application in better condition for allowance or appeal. Applicant also respectfully requests that the Examiner withdraw the defective rejection, and reconsider the claims in view of the foregoing remarks

It is believed that no additional fees are due in connection with this amendment. If any fee is due, please charge Deposit Account No. 08-2025.

Respectfully submitted,

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